

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

1st named inventor: Thomas Robieu

Serial No: 10/711,950

Filing Date: 10/15/2004

Title: Overload Protection Device and Machine Tool Having Such
Overload Protection Device

Examiner: Nathaniel C. Chukwurah

Art Unit: 3721

REPLY BRIEF

Appellant herewith submits a Reply Brief pursuant to 37 CFR 41.41 in response to Examiner's Answer dated 9/7/2007.

Re: B. The rejection of claim 1 under 35 USC 103(a) is proper and should be affirmed (pages 8 to 10)

The examiner states simply at the bottom of page 8 that the *UK reference 1,095,068* (in the following referred to simply as *UK*) discloses the subject matter of the invention.

UK does not disclose the invention as claimed as the feature of the coupling being forced against the drum by centrifugal force generated by rotation of the output shaft is not shown.

Examiner argues that *Nickel et al.* was simply chosen to show that it is obvious to provide drum and centrifugal weights that radially engage the drum at predetermined speed. Examiner refers to col. 6, lines 55-60 (this is a text citation examiner has not used before) where it is stated that when the rotational speed drops the return force of the springs 9, 10 overcome the centrifugal force so that the weights disengage and return to their rest position. Thus, decoupling is automatic.

However, the decoupling action described here is **decoupling of the driving force transmitted by the drive motor onto the output shaft as the rotor 3 is seated on the**

drive shaft and the slow-down requires the slow down of the drive motor. Moreover, the springs 9, 10 keep the weights forced against the shaft in the rest position, i.e., the weights are deflected only once the spring force is overcome by the centrifugal force.

Examiner further argues *Nickel et al.* was chosen to show that is obvious to provide drum and centrifugal weights radially engaging the drum.

It is again stressed that the centrifugal clutch of *Nickel et al.* can only operate when the rotor/weights are driven. The motor drives the centrifugal weights seated on the drive shaft and the centrifugal weights engages the drum 2 on the output shaft and drives the tool when the motor speed is high enough to overcome the force of the springs 9, 10). When the motor slows down or is shut off, the centrifugal clutch will disengage output shaft and tool.

The operating principle of the clutch of *Nickel et al.* (and of any other **centrifugal clutch**) is that the **centrifugal weights must be connected to the drive shaft in order to be deflected when the drive shaft rotates. The drum to be engaged is mounted on the output shaft driving the tool.** *Nickel et al.* only teaches that a centrifugal clutch can be used to transmit the drive action of a motor onto a tool as function of the motor speed.

Examiner further argues that appellant's argument concerning the reversal of the clutch is moot as the examiner relies on *Nickel et al.* only to show that drum and centrifugal weights are a better option than the design of the UK reference and that a person skilled in the art would not reverse the arrangement.

It appears that examiner is now arguing that the clutch of *Nickel et al.* should be used simply in a one-on-one exchange of parts (drum 12 of UK replaced by drum 2 of *Nickel et al.*, plate 14 of UK replaced by centrifugal weights 4, 5 of *Nickel et al.*).

It is again submitted that the clutch of *Nickel et al.* mounted in this way is not operative - the modified device *UK/Nickel* is inoperative. The suggested arrangement leads to the drum 12/2 being connected to the drive pinion and drive shaft. Thus, the drum 12/2 is driven. The centrifugal weights are now mounted in place of the plate 14 on the output shaft 5; they are moreover pressed by springs 9, 10 against the shaft. The output shaft 5 can only rotate when it is in driving connection by means of the centrifugal weights - but rotation of the output shaft requires the coupling to be engaged as the drive shaft is not driving the output shaft but the drum. However, without the shaft 5 rotating, the weights

will not be outwardly deflected to engage the drum 12/2.

The inventive arrangement requires that the arrangement of *Nickel et al.* be reversed. The examiner in the final rejection has made reference to col. 2, lines 59-68, of *Nickel et al.* (see page 3, lines 1-5) where it is stated that the rotor 3 is fixedly attached to the drive shaft and that at a predetermined speed the clutch automatically engages the drum 2 because the weights 4, 5 are moved outwardly. According to the present invention, the drum is drivingly connected to the drive shaft (driven by the drive pinion 7 connected to the drive shaft; claim 1) and the centrifugal coupling elements (weights) are connected to the output shaft (claim 1). Thus, the clutch of *Nickel et al.* in order to fulfill the claim language of claim 1 must be reversed: the drum must be connected to the drive shaft (drive pinion) and the centrifugal weights must be connected to the output shaft - this is what examiner appears to be arguing anyway when substituting drum 2 (*Nickel et al.*) for drum 12 (*UK*) and weights 4, 5 (*Nickel et al.*) for plate 14 (*UK*).

When the centrifugal weights of *Nickel et al.* are mounted on the output shaft and the drum is connected to the drive shaft, the output shaft can never be driven because the weights require a centrifugal force in order to be moved radially outwardly for engagement of the drum. The only logical use of the clutch of *Nickel et al.* on the *UK* device would be mounting the rotor 3 / weights 4, 5 on the drive shaft 2 for transmitting the driving action of the motor onto the output shaft and the tool. However, this does not lead to the inventive arrangement. Essentially looking at *Nickel et al.*, nobody would consider using such a clutch device in the *UK* device.

The "drum" 12 of *UK* is driven by the pinion directly by the drive motor. This is the **reverse arrangement** as in *Nickel et al.*: the drum in *Nickel et al.* is mounted fixedly on the output shaft and the centrifugal weights are mounted on the drive shaft in order to be deflected outwardly as the drive shaft rotates. When replacing the plate 14 with centrifugal coupling elements mounted on the output shaft 5, it is not possible to generate a centrifugal force that forces the weights mounted on the shaft 5 outwardly against the drum. This requires the output shaft to rotate but it cannot rotate unless it engages the drum 12. Centrifugal weights on the output shaft to be driven (and forced by springs 9, 10 against the shaft) are useless in the *UK* arrangement.

It is indeed so that the device of *UK* becomes inoperative when using the

clutch principle of Nickel et al. The *Nickel et al.* teaching has **not shown** that it is obvious to modify the UK reference.

Re: D. The rejection of claim 18 under 35 USC §103(a)

The examiner states that the Appellant's argument about the arrangement and function of *Bidanset* suggest that the Appellant is not disputing that *Bidanset* discloses the invention except the arrangement and its function (bottom of page 11 of examiner's answer).

Claim 18 sets forth an overload protection comprises a drum and at least one fly body engaging the circumferential wall of the drum, wherein drum and fly body are mounted in the drive train between the electric motor and the gearbox. The claimed arrangement is that the **drum is arranged at an input side of the drive train** and the at least one fly body is arranged at an output side of the drive train.

The examiner argued in the final rejection that *Bidanset* "discloses the claimed subject matter except the drum (5) and the at least one fly body mounted in the drive train between the motor and the gearbox; wherein the drum is arranged at an input side of the drive train and the at least one fly body is arranged at an output side of the drive train". The Examiner further stated (page 5, lines 2-7, of the final rejection) that "it would have been obvious to modify the reference by mounting ... since applicant has not disclosed that having the drum and the at least one fly body mounted ... **solves any stated problem or is for any purpose ...**".

Appellant - **in view of examiner's remarks** - has set forth in detail the special advantages of the present invention and has pointed to the relevant disclosure in the instant specification (see Appeal Brief).

It is all the more astounding to now read examiner's rebuttal that:

- "While Appellant may argue about the important of the arrangement, one skilled in the art would arrange the overload protection device in other ways than the claimed arrangement that provides advantages." (This sentence is not understood: other ways than the claimed one can certainly not make obvious the **CLAIMED** arrangement);
- "While Appellant may argue about the limitations in the claim, the limitation of "rotating masses..." are not relevant to the claim being argued."

The entire discussion provided in the Appeal Brief was based on examiner's request for evidence ("... since applicant has not disclosed that having the drum and the at least one fly body mounted ... **solves any stated problem or is for any purpose** ...").

Examiner has acknowledged that there is a structural difference between the claimed subject matter and the prior art and has therefore requested that evidence be provided of the special features and properties of the "reversed arrangement". Appellant has provided ample evidence and respectfully requests that the BOARD consider the provided arguments in full.

Points Not Specifically Addressed

In regard to those points of Examiner's Answer that have not been individually addressed, the BOARD is respectfully referred to the specific and detailed arguments submitted in the Appeal Brief.

CONCLUSION

For the reasons presented in the Appeal Brief and the reasons presented above, appellant believes that the appealed claims are allowable and respectfully requests that the Board of Patent Appeals and Interferences reconsider the rejection of the appealed claims and reverse the decision of the examiner in whole.

Authorization is herewith given to charge any fees or any shortages in any fees required during prosecution of this application and not paid by other means to Patent and Trademark Office deposit account 50-1199.

Respectfully submitted on October 29, 2007,

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